

A call record of the Southern Barred Frog *Mixophyes balbus* from East Gippsland

The Southern Barred Frog *Mixophyes balbus* is a large frog (to 80 mm) that historically occurred along the eastern slopes of the Great Dividing Range, extending from East Gippsland in Victoria to north-eastern New South Wales (DSEWPC 2011; DSE 2009a; NSW DECCW 2005). This species has undergone widespread decline across much of its former range (Mahony 1993; Tyler 1997), particularly in the southern portion, where it has been recorded at only three localities south of Sydney in the last 10 years (Daly *et al.* 2000; White 2000; Hunter 2001, cited in Gillespie 2011). This species is classified as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), listed under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act) and classified as Critically Endangered in Victoria (DSE 2007).

Mixophyes balbus has been recorded only three times in Victoria. These records are from East Gippsland including along the Tennyson River, Cann River (east branch) and Jones Creek (DSE 2009b). The last record was submitted to the Atlas of Victorian Wildlife database (AVW) in 1982 (DSE 2009b). Surveys for *M. balbus* in Victoria during the late 1980s and 1990s (Lugg *et al.* 1993; Holloway and Osbourne 1996), and more recently in 2010 (Gillespie 2011) have failed to locate this species.

This note describes an incidental and probable record of *M. balbus* from the Thurra River in East Gippsland, recorded during targeted surveys for large forest owls in March 2011.

Ecology

Previous studies have cited habitats for the Southern Barred Frog that include an association with permanent first-order streams through temperate and sub-tropical rainforest and wet sclerophyll forest (Mahony *et al.* 1997) and moist gullies in dry forest (Gillespie and Hines 1999, cited in DSEWPC 2011). While research in NSW has improved knowledge of this

species (e.g. Lemckert *et al.* 1997; Daly 1998; Daly *et al.* 2000; White 2000; Donnellan and Mahony 2009), the ecological requirements and constraints affecting its abundance and distribution in Victoria are still poorly known due to the paucity of records.

Based on records of *M. balbus* in NSW, modelling (NSW NPWS 1994 in Gillespie and Hines 1999) indicates that the species shows a preference for the interior of large tracts of forest in areas with relatively cool mean annual temperatures. These sites are typically free from any disturbance such as land clearance, forest grazing or other significant human impacts upstream, which may indicate that it is highly sensitive to perturbations in the environment (Mahony *et al.* 1997; Gillespie and Hines 1999).

Breeding sites are confined to a narrow niche, with eggs generally deposited within an excavation (in the gravel or leaf litter) in shallow running water between pools (Knowles *et al.* 1998). The tadpoles, described by Anstis (2002), Watson and Martin (1973) and Daly (1998), are highly distinctive and tadpole searches are considered to be an integral component of survey for *M. balbus* (Gillespie 2011).

Many factors may be involved in the decline of *M. balbus* across its range, including climate change, habitat loss and degradation, changes to hydrology and water quality, predation of eggs and tadpoles by introduced fish, and disease such as the Amphibian Chytrid Fungus *Batrachochytrium dendrobatidis*. Chytrid fungus has been implicated in the decline of many amphibian species (Commonwealth of Australia 2006), and Gillespie (2011) considers this the most likely cause of decline and/or disappearance of *M. balbus* in Victoria. Impacts from habitat modification and loss and/or predation by exotic fish are discounted by Gillespie (2011), as much of the remaining habitat in east Gippsland is relatively undisturbed and the water systems are largely free of exotic predatory

fish species such as trout. Impacts from predation by exotic mammalian predators such as foxes and cats are unknown (Gillespie 2011).

Record

During project work for large forest owls in East Gippsland, Ecology Australia staff undertook a nocturnal survey on 24 March 2011 at a site on the Thurra River, approximately 3 km south of Coopracambra National Park (Fig. 1). Weather conditions were overcast with light to moderate rain, and the survey period followed heavy rainfalls throughout East Gippsland, which resulted in the flooding of several rivers in the region. The survey began at approximately 8.30 pm and finished at approximately 10 pm.

Upon arrival at the site a number of frogs were heard calling, including the Victorian Smooth Froglet *Geocrinia victoriana*, Dendy's Toadlet *Pseudophryne dendyi* and Peron's Tree Frog *Litoria peronii* (see Table 1). During the survey period, repeated calls that closely resembled those of *M. balbus* were heard. Each call con-

sisted of a cadence of approximately six to 10 notes over approximately two to three seconds. Southern Banded Frog call-playback (recording by Murray Littlejohn) was then conducted, to which the frog responded with further calls. Active search in the area was then begun; however, the individual ceased calling and could not be located. As no further calls were heard from this individual, the project survey work resumed.

Ecology Australia staff subsequently revisited the site on 5 and 6 April 2011. Weather conditions during the second trip were generally fine or cloudy without rain, after little rainfall in the preceding week. Further call-playback surveys and active search for this species were undertaken, but no individuals were recorded. Frog activity was significantly less than during the first survey with only two species recorded (*G. victoriana* and *P. dendyi*), and in substantially less numbers. A habitat assessment was undertaken within the riparian zone of the Thurra River.



Fig. 1. Approximate location of the survey site along the Thurra River, East Gippsland shown by red star (Biodiversity Interactive Map - DSE 2011).

The Ecological Vegetation Class (EVC) at the site is Warm Temperate Rainforest (EVC 32), which occurs as patches in a linear strip of Riparian Forest (EVC 18) along the Thurra River (DSE 2011). Vegetation within approximately 100 m of the riparian zone is Damp Forest (EVC 29). The habitat assessment confirmed the presence of elements of Warm Temperate Rainforest/Wet Forest throughout the site, including a relatively dense canopy and mid-storey and the presence of numerous wet-site species (see Table 2).

In-stream habitat at the site comprises a sandy substrate supporting submerged vegetation, largely Water Ribbons *Triglochin* sp. Little emergent vegetation and numerous snags, logs and branches occur in, or over, the waterway, with fringing vegetation comprising numerous ferns, sedges and rushes. The site supported a relatively high level of organic litter, which may be important for *M. balbus* as refuge and egg nests sites (Knowles *et al.* 1998).

The site was adjacent to an access track; however, the track was overgrown and impenetrable beyond the site. The presence of a number of mature and senescing trees (Mountain Grey Gum *Eucalyptus cytellocarpa* and Manna Gum *E. viminalis*) in the vicinity of the site suggests that the site is unlikely to have been intensively logged recently. This is supported by interrogation of DSE's Forest Explorer Online (v4.1, accessed 5 May 2011), which shows that no commercial logging has been undertaken within approximately 300 m of the site in at least the past four decades.

Conclusion

The authors recognise the uncertainties associated with call-playback records for amphibians generally, and particularly for rare or cryptic

Table 1. Fauna species recorded during nocturnal survey on the Thurra River, East Gippsland.

Scientific Name	Common Name
<i>Geocrinia victoriana</i>	Victorian Smooth Froglet
<i>Litoria nudidigita</i>	Leaf Green Tree Frog
<i>Litoria peronii</i>	Peron's Tree Frog
<i>Mixophyes balbus</i>	Southern Barred Frog
<i>Ninox novae-hollandiae</i>	Boobook Owl
<i>Pseudophryne dendyi</i>	Dendy's Toadlet
<i>Tyto tenebricosa</i>	Sooty Owl

species. Given the repeated calls heard, which were mostly attributable to the Southern Barred Frog, the presence of potentially suitable habitat at the site, and the status of this species in Victoria, we consider that the site and surrounding areas of suitable habitat on the Thurra River warrant further investigation for the potential presence of the Southern Barred Frog.

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Table 2. Common Flora species recorded at the survey site on the Thurra River, East Gippsland.

Scientific Name	Common Name
<i>Asplenium</i> sp.	Necklace Fern
<i>Blechnum nudum</i>	Fishbone Water fern
<i>Coprosma quadrifida</i>	Prickly Currant-bush
<i>Gahnia sieberiana</i>	Red-fruit Saw-sedge
<i>Microsorium</i> sp.	Kangaroo Fern
<i>Leptospermum trinervium</i>	Paperbark Tea-tree
<i>Lomandra longifolia</i> ssp. <i>longifolia</i>	Spiny-headed Mat-rush
<i>Parsonia brownii</i>	Twining Silkpod
<i>Pimelia axiflora</i> ssp. <i>axiflora</i>	Bootlace Bush
<i>Pomaderris aspera</i>	Hazel Pomaderris
<i>Smilax australis</i>	Austral Sarsaparilla
<i>Syzygium smithii</i>	Lilly Pilly
<i>Tristaniopsis laurina</i>	Kanooka
<i>Hymenophyllum</i> sp.	Filmy Fern

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Frogs on the verandah

Change is a constant factor in the life of all species; something that often cannot be controlled but must be adapted to. Unfortunately, the extent and speed of change often do not allow for easy adaptation, and species are becoming extinct. For example, the processes of urbanisation, a major source of change for many native species, are ever increasing. It is predicted that by 2025 more than 60% of the human population will reside in urban settlements.

The Save the Frogs Foundation in America reports that more than a third of the globe's frog species are disappearing. Destruction of habitat associated with human population growth is one of the most important causal factors. Some frog species, however, are quite adaptable. One such species is the Southern Brown Tree Frog *Litoria ewingii*. This small frog has become common in our urban settlements while others have disappeared. In urban gardens, these frogs can be found in temporary and permanent water bodies, amongst vegetation, under logs and

rocks and in the water of bowls beneath potted plants.

In 2006 four individuals took up residence on the front porch of my house in Croydon, Victoria, specifically in one of the rosettes of a potted bromeliad (Fig. 1). One frog resided in the 'well' formed by the rosette of leaves, the other three in the axils of leaves on the same stem, each in its own small 'pool' that diligent watering maintained. This was a particularly dry year and the four frogs remained in their bromeliad ponds for nine months before conditions became sufficiently moist to entice them further afield.

I was informed that they had taken up residence on the porch early in September of 2006, by a cacophony of rapid and harsh calls, surprisingly loud considering they were only small frogs. Of an evening, I would see them venture from their homes either to the tips of the bromeliad leaves or to the *Dianella* below the porch, where they would await their dinner